

AMENDMENTS TO THE CLAIMS:

This listing of the claims will replace all prior versions, and listings, of the claims in this application.

Listing of Claims:

1. (Currently Amended) A device comprising:

a user input device comprising a plurality of sensors in an array for providing N-way directional control, the array being for tactile actuation by a user;

a controller responsive to the actuation of a sensor by itself or the simultaneous actuation of a pair of adjacent sensors, the

controller being configured to produce one of ~~a first set of~~ N different directional control signals upon actuation of a sensor by itself, or ~~one of a second set of control signals~~ upon simultaneous actuation of an adjacent pair of sensors ~~without simultaneous actuation of any of the other sensors; and~~

wherein each of the N directional control signals belong to a first set of directional control signals or a second set of directional control signals, wherein each sensor of in the array is associated with only one of the directional control signals of the first set and wherein each of the directional control signals of the second set is associated with an adjacent pair of sensors in the array, but not every one of the adjacent pairs of sensors is associated with a directional control signal of the second set.

2. (Previously Presented) A device as claimed in claim 1, wherein the plurality of sensors comprises a first set of sensors consisting of a first sensor adjacent a second sensor, constituting a first pair of sensors, and a third sensor adjacent the second sensor, constituting a second pair of sensors; and a second set of sensors consisting of a fourth sensor adjacent a fifth sensor, constituting a third pair of sensors, and a sixth sensor adjacent the fifth sensor, constituting a fourth pair of sensors.

3. (Currently Amended) A device as claimed in ~~claim 2~~ claim 1 wherein ~~the pairs~~ an adjacent pair

of sensors comprise two sensors that are located and arranged to be simultaneously actuated by a user using one digit.

4. (Previously Presented) A device as claimed in claim 2 wherein the first set of sensors is adjacent the second set of sensors.

5. (Currently Amended) A device as claimed in claim 2, wherein the controller is responsive to user actuation of a respective one of at least four of the six sensors to provide a respective one of four different directional control signals and is responsive to user actuation of a respective one of the first, second, third and fourth pairs of sensors to provide a respective one of an additional four different control signals.

6. (Currently Amended) A ~~hand portable~~ device as claimed in claim 1, wherein the controller is configured to produce:

- (a) a first directional control signal in response to the actuation of a second sensor;
- (b) a second directional control signal in response to the actuation of a first sensor;
- (c) a third directional control signal in response to actuation of both the first and second sensors simultaneously;
- (d) a fourth directional control signal in response to the actuation of a third sensor;
- (e) a fifth directional control signal in response to the actuation of both the second and third sensors simultaneously;
- (f) a sixth directional control signal in response to the actuation of a fifth sensor;
- (g) a seventh directional control signal in response to the actuation of both the fifth and sixth sensors simultaneously; and
- (h) an eighth directional control signal in response to the actuation of both the fourth and fifth sensors simultaneously.

7. (Currently Amended) A device as claimed in claim 6 wherein the controller, in response to the actuation of only the fourth sensor, is configured to produce the second directional control signal, and in response to actuation of only the sixth sensor, is configured to produce the fourth

directional control signal.

8. (Previously Presented) A device as claimed in claim 1 wherein the controller comprises a detector for detecting the simultaneous actuation of keys.

9. (Previously Presented) A device as claimed in claim 1 wherein the plurality of sensors is a 2x3 or 3x2 array of sensors.

10. (Currently Amended) A ~~hand-portable~~ device as claimed in claim 2 wherein the user input device is a keypad having first, second, third, fourth, fifth and sixth keys which respectively actuate the first, second, third, fourth, fifth and sixth sensors whereby the first, second, third and fourth pairs of sensors have corresponding first, second, third and fourth pairs of keys.

11. (Previously Presented) A device as claimed in claim 10 wherein each pair of keys are located and arranged to be simultaneously actuated by a user using one digit.

12. (Previously Presented) A device as claimed in claim 10 wherein the pairs of keys are located and arranged to be actuated by a user rolling or pivoting one digit.

13. (Previously Presented) A device as claimed in claim 10, wherein the first, second and third keys are arranged curvilinearly.

14. (Previously Presented) A device as claimed in claim 10, wherein the first, second and third keys are arranged rectilinearly.

15. (Previously Presented) A device as claimed in claim 10 wherein the fourth, fifth and sixth keys are arranged substantially parallel to the first, second and third keys.

16. (Previously Presented) A device as claimed in claim 10, wherein the first, second, third, fourth, fifth and sixth keys form an array.

17. (Previously Presented) A device as claimed in claim 1 wherein the first, second, third, fourth, fifth and sixth keys occupy an area not significantly exceeding 20 mm by 15 mm.

18. (Previously Presented) A device as claimed in claim 10 wherein the keypad comprises a 4x3 array of mobile telephone keys.

19. (Previously Presented) A device as claimed in claim 10 wherein the keypad is a typist's keypad.

20. (Currently Amended) A device as claimed in claim 10 having a data entry mode where the keypad including the plurality of keys are used to enter data wherein in said data entry mode the controller is responsive to the actuation of the first key and second key separately but not together to produce different directional control signals.

21. (Currently Amended) A device as claimed in claim 1 further comprising a display for displaying an image including an element moving in the display, wherein the first directional control signal causes the element to move in a first direction, the second directional control signal causes the element to move in a second direction and the third directional control signal causes the element to move in a third direction intermediate of the first and second directions.

22. (Currently Amended) A device as claimed in claim 1 further comprising a display for displaying an image having a perspective dependent upon a notional viewing position, wherein the first directional control signal causes the notional viewing position to move in a first direction, the second directional control signal causes the notional viewing position to move in a second direction and the third directional control signal causes the notional viewing position to move in a third direction intermediate of the first and second directions.

23. (Previously Presented) A method of providing N-way directional control using more than N/2 but less than N sensors in an array to provide N different directional control signals, wherein

each of the N different directional control signals is a member of either a first set of directional control signals or a second, different, set of directional control signals, the method comprising:

associating each one of the sensors in the array with only one directional control signal from the first set of directional control signals;

associating each of the directional control signals of the second set with a pair of sensors in the array without associating each of the pairs of sensors in the array with a directional control signal of the second set;

detecting when a sensor or sensors of the array are actuated; and
providing the directional control signal associated with the detected actuated sensor(s).

24. (Previously Presented) A device, for providing 8-way directional control, comprising a first set of sensors consisting of a first sensor adjacent a second sensor, constituting a first pair of sensors, and a third sensor adjacent the second sensor, constituting a second pair of sensors; and

a second set of sensors, adjacent the first set of sensors, consisting of a fourth sensor adjacent a fifth sensor, constituting a third pair of sensors, and a sixth sensor adjacent the fifth sensor, constituting a fourth pair of sensors;

wherein

user actuation of a respective one of at least four of the six sensors provides for control in a respective one of four different directions and

user actuation of each of the first, second, third and fourth pairs of sensors provides for control in a respective one of the remaining four different directions.

25. (Previously Presented) A device as claimed in claim 24, wherein the pairs of sensors are located and arranged to be simultaneously actuated by a user using one digit.

26. (Previously Presented) A device as claimed in claim 24, wherein the plurality of sensors is a 2x3 or 3x2 array of sensors.

27. (Previously Presented) A device as claimed in claim 24, comprising a keypad having first,

second, third, fourth, fifth and sixth keys which respectively actuate the first, second, third, fourth, fifth and sixth sensors whereby the first, second, third and fourth pairs of sensors have corresponding first, second, third and fourth pairs of keys.

28. (Previously Presented) A device as claimed in claim 27 wherein each pair of keys are located and arranged to be simultaneously actuated by a user using one digit.

29. (Previously Presented) A device as claimed in claim 27 wherein the pairs of keys are located and arranged to be actuated by a user rolling or pivoting one digit.

30. (Previously Presented) A device as claimed in claim 27, wherein the first, second and third keys are arranged curvilinearly.

31. (Previously Presented) A device as claimed in claim 27, wherein the first, second and third keys are arranged rectilinearly.

32. (Previously Presented) A device as claimed in claim 27 wherein the fourth, fifth and sixth keys are arranged substantially parallel to the first, second and third keys.

33. (Previously Presented) A device as claimed in claim 27, wherein the first, second, third, fourth, fifth and sixth keys form an array.

34. (Previously Presented) A device as claimed in claim 27, wherein the first, second, third, fourth, fifth and sixth keys occupy an area not significantly exceeding 20 mm by 15 mm.

35. (Previously Presented) A device as claimed in claim 27 wherein the keypad comprises a 4x3 array of mobile telephone keys.

36. (Previously Presented) A device as claimed in claim 27, wherein the keypad is a typist's keypad.

37. (Previously Presented) A device comprising a device as claimed in claim 24, and a controller, wherein the controller is configured to produce:

- (a) a first control signal in response to the actuation of the second sensor;
- (b) a second control signal in response to the actuation of the first sensor;
- (c) a third control signal in response to actuation of both the first and second sensors simultaneously;
- (d) a fourth control signal in response to the actuation of the third sensor;
- (e) a fifth control signal in response to the actuation of both the second and third sensors simultaneously;
- (f) a sixth control signal in response to the actuation of the fifth sensor;
- (g) a seventh control signal in response to the actuation of both the fifth and sixth sensors simultaneously; and
- (h) an eighth control signal in response to the actuation of both the fourth and fifth sensors simultaneously.

38. (Previously Presented) A device as claimed in claim 37 wherein the controller, in response to the actuation of only the fourth sensor, is configured to produce the second control signal and, in response to actuation of only the sixth sensor, is configured to produce the fourth control signal.

39. (Previously Presented) A device as claimed in claim 37, wherein the controller comprises a detector for detecting the simultaneous actuation of keys.

40. (Previously Presented) A device as claimed in claim 37 having a data entry mode where the keypad including the plurality of keys are used to enter data wherein in said data entry mode the controller is responsive to the actuation of the first key and second key separately but not together to produce different control signals.

41. (Previously Presented) A device as claimed in claim 37 further comprising a display for displaying an image including an element moving in the display, wherein the first control signal

causes the element to move in a first direction, the second control signal causes the element to move in a second direction and the third control signal causes the element to move in a third direction intermediate of the first and second directions.

42. (Previously Presented) A device as claimed in claim 37. further comprising a display for displaying an image having a perspective dependent upon a notional viewing position, wherein the first control signal causes the notional viewing position to move in a first direction, the second control signal causes the notional viewing position to move in a second direction and the third control signal causes the notional viewing position to move in a third direction intermediate of the first and second directions.

43. (Previously Presented) A method of providing 8-way directional control using a user input device comprising a first set of sensors consisting of a first sensor adjacent a second sensor, constituting a first pair of sensors, and a third sensor adjacent the second sensor, constituting a second pair of sensors and a second set of sensors, adjacent the first set of sensors, consisting of a fourth sensor adjacent a fifth sensor, constituting a third pair of sensors, and a sixth sensor adjacent the fifth sensor, constituting a fourth pair of sensors, comprising the steps of:
actuating predetermined ones of the sensors to move in any one of a first four orthogonal directions, and
actuating each of the predetermined the four pairs of the sensors to move in respective ones of a second four orthogonal directions, off-set by 45 degrees from the first four orthogonal directions.

44. (Currently Amended) A device for providing N-way directional control, the device comprising:

a user input device comprising more than $N/2$ sensors but less than N sensors in an array for directional control, the array being for tactile actuation by a user;

a controller responsive to the actuation of a sensor by itself or the simultaneous actuation of a pair of adjacent sensors;

wherein the controller produces one of N different directional control signals upon

actuation of a sensor by itself, or upon the simultaneous actuation of an adjacent pair of sensors;
and

wherein each of the N directional control signals belong to a first set of directional control signals or a second set of directional control signals, wherein each sensor in the array is associated with only one of the directional control signals of the first set and wherein each of the directional control signals of the second set is associated with an adjacent pair of sensors in the array, but not every one of the adjacent pair of sensors is associated with a directional control signal of the second set.

45. (Currently Amended) A method, comprising:

associating each one of the sensors in the an array with only one directional control signal from a first set of directional control signals;

associating each of the directional control ~~signal~~ signals of a second set of directional control signals with an adjacent pair of sensors in the array without associating each of the pairs of sensors in the array with a directional control signal of the second set;

detecting when a sensor in the array is actuated, or when an adjacent pair of sensors in the array are simultaneously actuated ~~without the simultaneous actuation of any of the other sensors in the array~~; and

producing the directional control signal associated with the detected actuated sensor(s).